C³ Demonstrator Cryogenics and Layout

Martin Breidenbach, Emilio Nanni, Marco Oriunno, Caterina Vernieri
Snowmass
July 2022
Functionality

- **Mode 1** - Normal Accelerator development
  - LN at nominal height above accelerator sections
  - low LN flow
- **Mode 2** - High flow for vibration testing etc, up to 10 kg/sec
LN Supply ~25000 liters. Adjust T ~79K
LN Control Valve regulates on LN height in cryomodules
Vent Valve regulates on nitrogen vapor pressure

Heater Array
LN in, vapor out at “SuperSector Cross”

LN comes in from bottom, inlet control valve regulates on liquid level.

Outlet valves regulate on pressure of vapor in cryomodules.

Both may require some feed-forward.

LN Tank ~25000 liters
Vent stack need to go suitably far away, as in over the hill
LN in boiler at same level as in cryomodules, covering Calrod array.